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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/658,422	09/10/2003	Kazuto Kinoshita	241812US3DIV	3186
40575 7590 07/02/2007 OLDS, MAIER & RICHARDSON 1000 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER PADGETT, MARIANNE L	
			ART UNIT 1762	PAPER NUMBER
			MAIL DATE 07/02/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/658,422

Applicant(s)

KINOSHITA ET AL.

Examiner

Marianne L. Padgett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 3/8/2007 & 10/26/2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 31-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 31-32 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

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1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/8/2007 has been entered.

It is noted that the amendments submitted with the after final of 10/26/2006 was noncompliant, hence was/is not entered, but the amendments submitted with the RCE is a duplicate of the after final amendment, except with the noncompliant omission of the canceled claims corrected. The comments on the merits of the amendment in the 11/22/2006 advisory remain applicable.

To reiterate, the term of disclaimer submitted on 10/26/2006, has been approved thus removing the obviousness double patenting rejection over USPN 6,821,906 B2. Logic & scope problems remain in claim 32. The claim 31 has been amended to recite the limitation "to cause the decomposed organic substance is to be removed from the surface of the substrate", which is a new issue.

2. Claims 31-32 are objected to because of the following informalities: The paired brackets, [], which is the symbol for concentration, should not be separated on two lines as it has been on lines 7-8 of claim 31 or lines 9-10 of claim 32, as such symbols are not meant to stand alone, any more than one should have one half of a pair of quotation marks sitting by itself without the phrase to which it's attached, or it is as improper as breaking a 1 syllable word up onto two lines.

Appropriate correction is required.

3. Claims 32 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In the amended claim 32, the phrasing "subjecting the reducing and oxidative members [H*] and [*OH] to cause a reaction with the decomposed organic substances", does not make sense as written, and

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appears to be either non-idiomatic or a fragmented phrase missing some words. To make sense, one needs to subject the identified members something, in order to cause the claimed reaction, thus the claim language leaves the reader to gas what is intended to be the cause of the reaction, i.e. is there a missing limitation, or was "subjecting" the wrong word choice? For instance, if the decomposed organic substances are being subjected to the reducing & oxidative members, then appropriate phrasing might be --wherein the reducing and...are subjected to the decomposed organic substances to cause a reaction with the decomposed organic substances--.

As previously rejected, in claim 32, the limitation of "liquid developer" has no clear meaning due to a **lack of context** in the claim, or in other words there is nothing claimed about the substrate that can be developed, so it is impossible to determine what might be being deposited or what scope this might cover, i.e. it is unclear if the deposited liquid is intended to read on almost any liquid that can have some effect of depositing or removing, etc., or if it is intended to mean some particular class of compositions.

Applicant's citation of pages 26-27 of the specification (bridging paragraph) is not found to provide any significant meaning to the term "liquid developer", as this disclosure also provides no clue as to what on the substrate may be being developed, for what purpose, or what effect, or what the liquid developer might include, such that the claimed treating process of the substrate of unspecified material, has undeterminable effect when a liquid developer is apply, thus what the claim might read on is also unclear. It is noted that the surface of the substrate is relatively undefined, except that it has been "wet washed" & had the contact angle reduced by decomposition of organic substances deposited on the surface of the substrate, which treated substances might be intended to be further reacted with the radicals from the split water vapor, where it is uncertain what on the substrate surface or possibly even the decompose/reacted organic substances, might be intended to be "developed" by the "liquid developer". In other words, it is impossible to tell if this is a cleaning process being described in the "wet washing" through "subjecting" steps that is intended to facilitate the subsequently applied "liquid developer" to produce some

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unspecified effect, or if the treatment using the specified UV light + water vapor is actually part of some development process, such as for causing patterning or some such unspecified effect, etc., such that for instance it causes functionalization of the decomposed organic substance, which is then either effected or not effected by the liquid developer, etc. While it is true as applicant states that generally "There is no further requirement that the liquid developer be described with any more clear meaning than is described in the specification", it is also true the meaning and the scope of the claimed limitations MUST BE CLEAR. In other words speaking generally, an unclear or vague disclosure in the specification, does not entitle applicants to the issuance of unclear or vague claims.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Suzuki (6,217,665 B1), in view of Jüstel et al. (6398970 B1), and/or Hiramoto et al. (JP 7-179629).

Suzuki teaches cleaning substrates that may have organic or inorganic contaminants thereon, in advance of a wet cleaning process, by irradiating that substrate in atmospheric air (i.e. is a mixture of oxygen, water vapor, nitrogen, inert gases, etc.) with a UV light source, such as a discharge lamp or

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lamps, where it is particularly noted that the UV light source should include wavelengths 184.9 & 250 3.7 nm. The UV treatment cleans the substrate (glass) of organic matter by chemically removing it & the surface tension of the glass is reduced to improve the wettability for subsequent wet cleaning in pure water, after which may follow another irradiation treatment with ultraviolet rays or "draining with an air knife", which is considered to read on drying, and thereafter subsequent coating processes, such as flexographic printing of a polyimide film or coating with a photoresist, or the like may be applied, which as they are liquid depositions might be considered to read on possible meanings of "liquid development", as they further develop the substrate and are liquid. In Suzuki see the abstract; figures 1-24 illustration of moving conveyors; col. 1, lines 10-15; col. 1, lines 34-col. 3, lines 13; examples, especially col. 3, lines 24-43 & col. 4, lines 5-25; and claims, especially 1-3, 5, 8-9, 11-24, particularly noting claims 11 & 23-24. Note that the claimed process while requiring "a mixed atmosphere of an inert gas and water vapor" does not exclude the presence of other components in that mixed atmosphere.

The teachings of Suzuki differ from those of applicant by not specifying that their discharge lamp is a "dielectric barrier discharge lamp", however as they teach any discharge lamp that includes sufficient amount of 184.9 & 250 3.7 nm wavelengths is not limited by whether or not the discharge lamp is a dielectric barrier type discharge lamp, especially considering a generic "dielectric barrier discharge lamp" produces no particular wavelengths & applicants' claims encompass the entire ultraviolet light spectrum, hence claiming the same reaction of water vapor in the presence or under the influence of any wavelength of ultraviolet light, hence while Suzuki does not discuss the water vapor component of air, it's decomposition products under ultraviolet light employed & their effects on the organic contaminants present on the substrate surface, lacking any evidence to the contrary, the water vapor present in air, along with the inert gas component of air or the taught additional inert gas added as a diluent, would have inherently undergone the same water splitting reaction & consequent effect on organic contaminants, since generic discharge lamp versus dielectric discharge lamp does not change the nature of a UV

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wavelength (particular gases used in these lamps can affect the particular wavelengths, but no specific species of dielectric discharge lamp, hence no specific wavelengths are claimed or required).

With respect to dielectric discharge lamps in particular, it would've been obvious to one of ordinary skill in the art to employ dielectric discharge lamps that produce wavelengths required by Suzuki, given that such discharge lamps are seen to be known as taught by Jüstel et al. (abstract; spectral range between 230-300 nm) and/or Hiramoto et al. (English abstract or [0013] UV wavelengths of 160-200 nm).

6. Jackson (5,236,602), in its background (col. 1, lines 26-40) provides information cumulative to the above process in that it discloses that wavelengths employed by Suzuki are absorbed by the contaminant hydrocarbon materials causing dissociation thereof, so as to fragment & resultant formation of water among the decomposition products, such that even if dry air had been employed (not something suggested it disclosure of Suzuki (665)), the taught treatment of cleaning organic contaminants would have provided water vapor to the cleaning environment, which would have proceeded to react with the applied UV & any remaining contaminants.

Yoshida et al. (6,508,990 B1) has a similar teaching to that of Jackson's background, on col. 1, lines 21-35, and further teaches a UV radiation treatment where an active species generator, such as ozone or oxygen, is present to react with organic substances and decompose them (col. 7, lines 44-52), with taught radiation sources include low-pressure mercury vapor lamps with 185 & 254 wavelengths, or alternately a UV light source, such as a dielectric barrier discharge lamp having 172 nm wavelengths or others (col. 8, lines 64-col. 9, lines 12), thus providing another alternative & equivalent reference to Jüstel et al. &/or Hiramoto et al. for expected useful dielectric barrier discharge lamps in the process of Suzuki.

Miki et al. (6,610,168 B1) is of uncertain status as prior art, as it's filing date 8/14/2000 is 10 days after applicants, however he has a CIP parent filed 10/12/1999, which was abandoned & not available for

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review, however Miiki et al. preforms steam cleaning under UV radiation, which may be done in the presence of an air layer (col. 2, lines 45-52; col. 3, lines 4-10 & 41-47; cols. 13-14), assuming air is atmospheric air there is therefore inert gas present, and while a moving conveyor is not discussed, the process is for cleaning structures in making semiconductor circuits & removing photoresist, the types of procedures that would be have been expected to be done on moving conveyors, especially considering process such as Suzuki (665) discussed above. However, such rejection is presently superfluous, especially considering Miki et al. is uncertain status as prior art.

Other art of interest includes Curry et al. (6,692,694 B1) who sprays in aqueous aerosol in atmospheric air on surfaces to be cleaned while simultaneously illuminating with UV radiation, where it is noted that the aqueous aerosol will by its very nature contain water vapor of a higher concentration and the atmospheric air, which provides the presence of inert gas, however Currie et al.'s process has no moving conveyor. Other art of interest but not prior art includes Jackson (2004/0011378 A1); Kuriyama et al. (2007/0117365 A1); & Suzuki (2004/0103913 A1).

7. Applicant's arguments filed 3/8/2007 = 11/22/2006 and discussed above have been fully considered but they are not persuasive.

Applicant's arguments with respect to claims 31-32 have been considered but are moot in view of the new ground(s) of rejection.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne L. Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

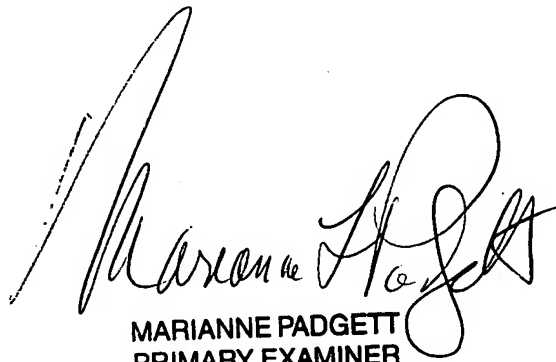
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks, can be reached at (571) 272-1423. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MLP/dictation software

6/24/2007



MARIANNE PADGETT
PRIMARY EXAMINER